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| EXAMINER | |
|---|---|
| KHUONG, LEE T | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2665 | |

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/862,861 | KIRKBY ET AL. | |
| | Examiner | Art Unit | |
| | Lee Khuong | 2665 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

1. Claim 23 is objected to because of the following informalities: on line 7 of claim 23, the word "aid" is suggested to be replaced with the word "said" for a type error. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 13-15, 17-21 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Zadikian et al. (US 6,631,134) hereinafter is referred as Zadikian.

**Regarding claims 13 and 33,** Zadikian teaches A System and Method For Allocating Bandwidth In An Optical Network. Zadikian teaches a method and software that allocates resources in a communications network having a hierarchy of transport layers (***an end-user, a service provider***), each said layer having its own resource capacity (see col. 23, line 23 – col. 24, line 20, ***bandwidth demand vs. bandwidth supply with respect to end-user vs. service provider***), the method comprising; determining within a said layer whether that layer has sufficient resources to support a request for service (step 1510, Fig. 15, see col. 23, lines 29-31, ***the service***

***provider determines if there is an available bandwidth that can fulfill the requested bandwidth of the end-user***), and, where insufficient resources are available, automatically requesting further resources from one or more other said layers (step 1500, Fig. 15, see col. 23, lines 26-29 and col. 24, lines 3-6, ***available and reserved bandwidth, total capacity***).

**Regarding claims 14, 18,** Zadikian teaches all limitations set forth in the rejections of claim 13 and 17. Zadikian further teaches wherein a demand oriented price for requested resource use is determined by each said layer (see col. 23, line 3 – col. 24, line 10, ***a market price for an available bandwidth is varied depending on supply vs. demand***), and wherein said price is offered by that layer to any other layer requesting use of that resource (see col. 23, line 3 – col. 24, line 10).

**Regarding claim 15,** Zadikian teaches all limitations set forth in the rejection of claim 14. Zadikian further teaches wherein allocation of resources from one layer (***the service provider***) to another (***the end-user***) is determined by a customer willingness to pay the current price for those resources (step 1520, Fig. 15, see col. 23, lines 31-34, ***the service provider determines the availability of a physical path having the requested bandwidth, including meeting an optional cost metric requirement provided by the end-user***).

**Regarding claims 17, 19, 20,** Zadikian teaches A System and Method For Allocating Bandwidth In An Optical Network. Zadikian teaches a method of managing a communications network having a multi-layer hierarchical structure in which each layer of the hierarchy can

provide a transport service to one or more other layers, the method comprising negotiating automatically between said layers to determine a network resource allocation and a resource price to be offered to a customer for admission to the network and utilisation of said resource allocation (steps 1500 - 1540, Fig. 15, see col. 5, lines 23-25 and col. 23, lines 23-43, ***a service provider automatically determines available bandwidth that can meet an end-user requested bandwidth and the end-user cost metric. In step 1540, if the physical path of the requested bandwidth is available and the pre-determined cost has been met then the physical path is allocated by the service provider***).

**Regarding claim 21,** Zadikian teaches A System and Method For Allocating Bandwidth In An Optical Network. Zadikian teaches a layered resource-allocation system comprising: a first layer comprising a topology manager (***an end-user***) arranged to provide an indication (***a request for bandwidth***) of required resources (step 1500, Fig. 15, see col. 23, lines 23-43) and an indication of willingness to pay for said required resources (step 1510, Fig. 15, see col. 23, lines 23-43, ***the service provides determines the required bandwidth and analyzes the end-user's cost metric***); a second layer comprising a service manager (***the service provider***) arranged to provide said resources responsive to a comparison between said willingness to pay and a price of said required resources (see col. 23, line 3 – col. 24, line 10, ***WBS-Bandwidth Brokeage Service Supply vs. Demand business pricing***).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zadikian in view of Grover (US 5,848,139).

**Regarding claims 1 and 22,** Zadikian teaches A System and Method For Allocating Bandwidth In An Optical Network. Zadikian teaches a system and method of allocating resources in a network having multiple resource-allocation layers and in which a first layer (***an end-user***, Fig. 15, see col. 23, lines 27-29) requires resources provided by a second (***a service provider***, Fig. 15, see col. 23, lines 23-31) of said layers, the method comprising the steps of: at said first layer, providing an indication (***a request***) to the second layer of said required resources to be allocated from said second layer (step 1500, Fig. 15, see col. 23, lines 27-29, ***the end-user***

***requests for bandwidth***); at said second layer automatically offering said required resource together with a condition (***a cost metric***) for use of those resources (step 1510, Fig. 15, see col. 5, lines 23-25 and col. 23, lines 23-43, ***the service provider determines required bandwidth and a metric***).

Zadikian does not teach at said first layer determining if the condition for use of the offered resources is acceptable and, if so, automatically accepting the offered resources from the second layer.

Grover teaches the first layer/***end-user/subscriber,*** Fig. 1 determines the condition for user of the offered resources is acceptable and automatically accepting the offered resources from the second layer/***service provider/price controller 30,*** Fig. 1 (see col. 4, lines 6-18, ***the subscriber determines if the price set by the price controller meets the specified price set by the subscriber***).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ the telecommunication traffic pricing control method as taught by Grover with the allocating bandwidth in an optical network method of Zadikian to arrive the claimed invention as specified in claims 1 and 22.

The suggestion/motivation for doing so would have been to be able to provide a fair marketing price for a bandwidth allocation of a telecommunication network and also to provide more flexibility over controlling the market price by the end-user/subscriber (see col. 2, lines 23-37).

**Regarding claim 2,** Zadikian and Grover teach all limitations set forth in the rejection of claim 1. Grover further teaches wherein said condition includes a price for use of said offered resources (see col. 4, lines 6-18, ***the subscriber set the limit of the market price he/she would like to purchase the required bandwidth***).

**Regarding claim 3,** Zadikian and Grover teach all limitations set forth in the rejection of claim 2. Grover further teaches the step of varying said price responsive to said request and to availability of said resources (see col. 2, lines 32-37, col. 3, lines 32-60 and col. 4, lines 49-67, ***a market price for bandwidth is varied depending on supply vs. demand of the available bandwidth. The market price is updated accordingly by the price controller***).

**Regarding claim 4,** Zadikian and Grover teach all limitations set forth in the rejection of claim 1. Grover further teaches wherein said price acceptability is determined by said first layer according to a pre-determined allocation policy (see col. 4, lines 6-18, ***the purchasing price is pre-determined set by the end-user/subscriber***).

**Regarding claim 5,** Zadikian and Grover teach all limitations set forth in the rejection of claim 3. Zadikian further teaches the step of: monitoring a characteristic effect of said allocation policy (see col. 20, lines 49-60); varying said allocation policy responsive to said characteristic (see col. 21, lines 3-15, ***given a resource fails in a router 100, the system will use the resource its backup/redundant part***).

**Regarding claim 6,** Zadikian and Grover teach all limitations set forth in the rejection of claim 3. Zadikian further teaches wherein said network incorporates a multi-wavelength transport layer (100, Fig. 1A, see col. 7, lines 9-17, ***a router that supports optical network transmission***).

**Regarding claim 7,** Zadikian and Grover teach all limitations set forth in the rejection of claim 6. Zadikian further teaches wherein traffic ingress (110, Fig. 1A) to said multi-wavelength transport layer is controlled via a virtual port (see col. 7, lines 17-25 and col. 9, lines 38-53, ***virtual path/trunking/group***).

**Regarding claim 8,** Zadikian and Grover teach all limitations set forth in the rejection of claim 7. Zadikian further teaches wherein said virtual port provides access to a plurality of real ports one for each wavelength transported on the multi-wavelength transport layer (see col. 7, lines 17-25, lines 35-52 and col. 8, lines 13-34, ***trunking***).

7. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zadikian in view of Grover and further in view of Desai et al. (US 5,623,534), hereinafter is referred as Desai.

**Regarding claim 9,** Zadikian and Grover teach all limitations set forth in the rejection of claim 8. Zadikian and Grover both teach grouping/trunking of physical input/output ports to accommodate a large bandwidth transmission path and to prevent network congestion (see col. 6, lines 40-51).

Both Zadikian and Grover do not teach expressly of providing load balancing for a virtual port/***virtual path/group of line cards***.

However, trunking and load balancing for multiple physical ports/a logical port is well known in the art for providing redundancy and preventing network congestion as evidenced by Desai.

Desai teaches providing load balancing for multiple physical ports (26, Fig. 1, see col. 4, line 49 – col. 5, line 8, ***a load balancing method for multiple physical lines/ports 26 by a system switch 2***).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ the load balancing for a logical path of Desai with the allocating bandwidth in an optical network method of Zadikian and Grover to arrive the claimed invention as specified in claim 9.

The suggestion/motivation for doing so would have been to prevent network congestion.

**Regarding claim 10,** Zadikian, Grover and Desai teach all limitations set forth in the rejection of claim 9. Grover further teaches wherein an ingress control of said Virtual port advertises an ingress access price for bandwidth use in the multi-wavelength transport layer (see col. 4, lines 6-18, ***the subscriber determines/controls the purchasing price***).

**Regarding claim 11,** Zadikian, Grover and Desai teach all limitations set forth in the rejection of claim 10. Zadikian further teaches wherein the ingress control of said virtual port allocates ingress traffic to one or more individual wavelengths in the multi-wavelength transport

layer according to a current bandwidth price for access to the multi-wavelength transport layer (see col. 5, lines 23-45 and col. 23, line 3 – col. 24, line 10).

**Regarding claim 12,** Zadikian, Grover and Desai teach all limitations set forth in the rejection of claim 11. Zadikian further teaches wherein said multi-wavelength transport layer provides supertrunks between ingress and egress ports (***groups***, Fig. 2, see col. 9, line 38 – col. 10, line 4).

8. Claims 16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zadikian in view Desai.

**Regarding claim 16,** Zadikian teaches all limitations set forth in the rejection of claim 15. Zadikian further teaches providing uniform resource vertically over said hierarchy of layers (see col. 7, lines 17-25 and col. 9, lines 38-53, ***virtual path/trunking/group***).

Zadikian does not expressly teach providing network resources horizontally across said hierarchy of layers.

Desai teaches providing network resources horizontally across said hierarchy of layers (26, Fig. 1, see col. 4, line 49 – col. 5, line 8, ***a load balancing method for multiple physical lines/ports 26 by a system switch 2***).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ the load balancing for a logical path of Desai with the allocating bandwidth in an optical network method of Zadikian to arrive the claimed invention as specified in claim 16.

The suggestion/motivation for doing so would have been to prevent network congestion.

**Regarding claim 23,** Zadikian teaches A System and Method For Allocating Bandwidth In An Optical Network. Zadikian teaches a communications network (190, Fig. 1B, ***an optical network***) having multiple resource-allocation layers (***an end-user and a service provider***) and incorporating a resource allocation management structure for allocating requested resources between said layers (Fig. 15, see col. 23, lines 23-55), said network including a multi-wavelength transport layer to which controlled access is provided via one or more virtual ports (210-1 … 210-N, ***groups of ports to form multiple virtual/logical paths; wherein each logical path represent many physical ports for trunk purpose***), wherein each said virtual port provides access to a plurality of real ports one for each wavelength transported on the multi-wavelength transport layer (see col. 7, lines 17-25, lines 35-52 and col. 8, lines 13-34).

Zadikian does not expressly teach wherein said virtual port distributes traffic to said real ports so as to balance the loading of the real ports.

Desai teaches providing load balancing for multiple physical ports (26, Fig. 1, see col. 4, line 49 – col. 5, line 8, ***a load balancing method for multiple physical lines/ports 26 by a system switch 2***).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ the load balancing for a logical path of Desai with the allocating bandwidth in an optical network method of Zadikian and Grover to arrive the claimed invention as specified in claim 23.

The suggestion/motivation for doing so would have been to prevent network congestion.

9. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zadikian in view Desai and further in view of Grover.

**Regarding claim 24,** Zadikian and Desai teach all limitations set forth in the rejection of claim 23.

Zadikian and Desai do not expressly teach an ingress port advertises an accessing price.

Grover further teaches wherein an ingress control of said Virtual port advertises an ingress access price for bandwidth use in the multi-wavelength transport layer (see col. 4, lines 6-18, ***the subscriber determines/controls the purchasing price***).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ the telecommunication traffic pricing control method as taught by Grover with the allocating bandwidth in an optical network method of Zadikian to arrive the claimed invention as specified in claim 24.

The suggestion/motivation for doing so would have been to be able to provide a competitive marketing price for a bandwidth allocation of a telecommunication network and also to provide more flexibility over controlling the market price by the end-user/subscriber (see col. 2, lines 23-37).

**Regarding claim 25,** this claim has similar limitations of claim 11. Therefore, it is rejected under Zadikian for the same reasons set forth in the rejection of claim 11.

**Regarding claim 26,** this claim has similar limitations of claim 12. Therefore, it is rejected under Zadikian for the same reasons set forth in the rejection of claim 12.

10. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zadikian in view Tappan.

**Regarding claim 27,** Zadikian teaches A System and Method For Allocating Bandwidth In An Optical Network. Zadikian's system comprises: an upper Internet protocol (IP) layer (***the router at the end-user LAN***), a synchronous transport (SDH) layer (***the optical router 100, Fig. 1 of the service provider that provides the bandwidth allocation***), and an underlying multi-wavelength optical transport layer (***the multi-wavelength switch in the optical router of the service provider***), wherein each said layer has a respective manager (***the end-user, the service provider***) arranged to manage resources within that layer (see col. 7, lines 35-52), to respond to requests for service from other layer managers (step 1510, Fig. 15, see col. 23, lines 23-31, ***the service provider determines a requested bandwidth and analyzes a cost metric requirements from the end-user***), to set a price for those service requests (step 1520, Fig. 15, see col. 23-43, ***the service provider determines the availability of a path that can meet the requested bandwidth and the cost metric***), and to request service from the other layer managers (step 1500, Fig. 15, ***the end-user sends a request for bandwidth to service providers***), and wherein an interlayer manager responsible for controlling the resource allocation and resource pricing of each said layer manager so as to optimize use of the resources within each said layer (see col. 23, line 3 – col. 24, line 10).

Zadikian does not teach the router at the end-user (an ISP, ***an internet service provider***) LAN supports MPLS.

Tappan teaches the ISP (***the end-user in Zadikian's patent***) router supports MPLS (PE2, Fig. 5, see col. 3, lines 3-19, ***the ISP's router supports MPLS protocol***).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ the MPLS router of Tappan with the allocating bandwidth in an optical network method of Zadikian to arrive the claimed invention as specified in claim 27.

The suggestion/motivation for doing so would have been to be able to provide a fast forwarding of a middle-man network and relieve the ISP from wasting precious network resource on the task of network routing table search (see col. 2, lines 45-60).

**Regarding claim 28,** this claim has similar limitations of claim 7. Therefore, it is rejected under Zadikian for the same reasons set forth in the rejection of claim 7.

**Regarding claim 29,** this claim has similar limitations of claim 8. Therefore, it is rejected under Zadikian for the same reasons set forth in the rejection of claim 8.

11. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zadikian in view Tappan and further in view of Desai.

**Regarding claim 30,** Zadikian and Tappan teach all limitations set forth in the rejections of claim 29.

Zadikian and Tappan do not teach expressly of providing load balancing for a virtual port/***virtual path/group of line cards***.

However, trunking and load balancing for multiple physical ports/a logical port is well known in the art for providing redundancy and preventing network congestion as evidenced by Desai.

Desai teaches providing load balancing for multiple physical ports (26, Fig. 1, see col. 4, line 49 – col. 5, line 8, ***a load balancing method for multiple physical lines/ports 26 by a system switch 2***).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ the load balancing for a logical path of Desai with the allocating bandwidth in an optical network method of Zadikian and Grover to arrive the claimed invention as specified in claim 30.

The suggestion/motivation for doing so would have been to prevent network congestion.

**Regarding claim 31,** this claim has similar limitations of claim 11. Therefore, it is rejected under Zadikian for the same reasons set forth in the rejection of claim 11.

**Regarding claim 32,** this claim has similar limitations of claim 12. Therefore, it is rejected under Zadikian for the same reasons set forth in the rejection of claim 12.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hernandez et al. (US 6,208,977); Saari et al. (US 6,338,046); Rosu (US 6,421,434); Mashinsky (US 6,442,258); Mashinsky (US 6,542,588); Adams et al. (US 6,724,875); are cited to show a System and Method for Managing and Controlling Multi-Layer Networks.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Khuong whose telephone number is 571-272-3157. The examiner can normally be reached on 9AM - 5PM.

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lee T. Khuong
Examiner
Art Unit 2665

ALPUS H. HSU
PRIMARY EXAMINER